

ABSTRACT

A stacked interconnect structure to connect a first layer copper line with a second layer copper line and method of making the same includes depositing a barrier layer over the inner surfaces of a via extending through a first dielectric layer between the first and second layer copper lines. The first barrier layer provides a barrier to copper diffusion into the dielectric layer. The first barrier layer is then selectively etched from the bottom surface of the via, after which a second barrier layer is deposited over the vertical and bottom surfaces of the via. The second barrier layer also provides a barrier to the diffusion of copper, but is less resistive than the first barrier, and ensure wettability of the copper.